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July 2, 1991

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Ms. Donna R. Searcy  
Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

RE: RM-7722

Dear Ms. Searcy:

Transmitted herewith on behalf of Harris Corporation--  
Farinon Division are an original and nine (9) copies of its  
Reply Comments in the above-referenced proceeding.

Should any additional information be desired, please  
communicate with this office.

Very truly yours,



Barry Lambergerman  
Counsel for  
Harris Corporation --  
Farinon Division

BL/eg  
Enclosure

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JUL - 2 1991

BEFORE THE

**Federal Communications Commission**

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

WASHINGTON, D.C. 20554

In the Matter of )  
 )  
Amendment of Parts 2, 21 and 94 ) RM - 7722  
of the Commission's Rules )  
Concerning Channel Assignments )  
in the 27.5-29.5 GHz Band )

To: The Commission

**REPLY COMMENTS**

HARRIS CORPORATION --  
FARINON DIVISION

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July 2, 1991

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SUMMARY

The arguments raised in opposition to Harris' Petition neither require nor justify not going forward with the requested rule making. First of all, arguments that other bands should be used for PCS microcell and cellular interconnection are largely irrelevant because the purpose of the Petition is not to "designate" the 28 GHz band for PCS microcell interconnection or any other type of short haul microwave use, but simply to give structure to an existing allocation so that the band can finally be put to use for the purposes for which it has long been allocated.

Second, arguments that the Petition should be denied or that action on it be deferred in light of possible future alternative uses of the 28 GHz band are also misplaced because Harris is not proposing to allocate additional spectrum for point-to-point operations, but simply to make an existing allocation useable. Moreover, use of the band for video distribution is not justified because there is already a plethora of vehicles for the distribution of video programming and there is no basis for the argument that use of the band for point-to-multipoint operations would be more spectrum efficient than point-to-point operations.

Third, whether or not there is a demonstrated need for point-to-point frequencies in the 28 GHz band at this time misses the point for the same reason -- the band is already allocated for point-to-point use under Part 21 and the objective

of the Petition is to make this allocation useable. Besides which, there is demand for point-to-point use of the band.

Fourth, the proposed channelization plan offers sufficient flexibility and if, in fact, it is shown that there will be worthwhile uses for the 28 GHz band for which a bandwidth greater than 80 MHz may be required, then the Commission could permit the "stacking" of channels as it does in other bands.

Fifth, whether or not individual link licensing is desirable for the 28 GHz band has no bearing on whether the Commission should go forward with a NPRM because this issue can be dealt with in the context of the proposed rule making proceeding.

Sixth, Harris' proposal should not be considered in the context of the PCS proceeding because that proceeding is limited in scope and, under the rules proposed in the Petition, the band would remain available for all point-to-point uses.

Finally, a Part 94 allocation is justified because common carriers are not making any use of the 28 GHz band at the present time and shared allocations have been successful in other bands. Thus, there is no reason to believe that the band cannot accommodate both Part 21 and Part 94 users.

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BEFORE THE

**Federal Communications Commission**

WASHINGTON, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )  
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Amendment of Parts 2, 21 and 94 ) RM - 7722  
of the Commission's Rules )  
Concerning Channel Assignments )  
in the 27.5-29.5 GHz Band )

To: The Commission

**REPLY COMMENTS**

The Harris Corporation -- Farinon Division ("Harris"), by its attorneys, hereby replies to the oppositions and comments filed in response to the above-captioned Petition for Rule Making.

**I. THE OPPONENTS MISAPPREHEND THE NATURE  
AND PURPOSE OF HARRIS' PETITION**

One of the reasons cited by those commenters who opposed or criticized Harris' Petition is that they would prefer that other bands be used for the interconnection of future PCS microcells and/or cellular system cell sites. However, arguments that other bands can or should be used for PCS microcell or cellular interconnection are beside the point and neither require nor justify not going forward with the requested rule making. These arguments simply reflect a misunderstanding of the nature and purpose of the Petition.

Specifically, several commenters contend that Harris' Petition should be denied because they claim that the 38 GHz and 23 GHz bands are better suited than the 28 GHz band for PCS

microcell and cellular system cell site interconnection.<sup>1/</sup> In fact, two commenters characterize Harris' Petition as a proposal to "designate" the 28 GHz band for use in PCS systems.<sup>2/</sup> Such a characterization is simply incorrect.

The purpose of Harris's Petition is not to "designate" the 28 GHz band as the band for PCS microcell interconnection. Nor was it intended to make the 28 GHz band the band of choice for any other type of short haul microwave use, such as cell site interconnection. Rather, the primary purpose of the proposed channelization plan is simply to give structure to an existing allocation so that the band can finally be put to use for the purposes for which it has long been allocated. In other words, the point of the Petition is not what the band should be used for, but how its use should be implemented. Harris merely cited the interconnection of PCS microcells and regular cell sites as examples of the types of point-to-point uses to which the 28 GHz band could be put, if properly channelized.<sup>3/</sup>

In this regard, Motorola Microwave and Telesciences seem to suggest that the 28 GHz and 38 GHz bands are mutually exclusive when it comes to PCS interconnection. Motorola Microwave, for

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<sup>1/</sup> Opposition of Suite 12 Group at 5, 7-8; Comments of Motorola Microwave at 5-8; Comments of TeleSciences, Inc. at 2.

<sup>2/</sup> Comments of Motorola Microwave at 6; Opposition of Suite 12 Group at 6 n.6.

<sup>3/</sup> Indeed, as a prospective manufacturer of 28 GHz equipment, Harris has every incentive to encourage the development of other point-to-point applications of the band such as those cited by the American Petroleum Institute ("API"). Statement of Support of API at 4-5.

example, makes the wholly irrelevant argument that if the U.S. does not follow the lead of other countries in designating the 38 GHz band for PCS microcell interconnection, "U.S. manufacturers will not be able to take advantage of the substantial manufacturing economies of producing high frequency microwave equipment operating on a single frequency band."4/

But, again, contrary to Motorola Microwave's assumption, Harris has not proposed that the Commission designate the 28 GHz band as the band for future microcell interconnection. Indeed, Harris would oppose designating either the 28 or the 38 MHz band for that purpose, for at least two reasons. First, it would be premature to do so before the Commission reaches decisions concerning the establishment of one or more PCS services, as contemplated in its inquiry in General Docket No. 90-314.

Secondly, assuming the Commission does establish one or more PCS services involving microcell interconnection, it would

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4/ Comments of Motorola Microwave at 5; see also Comments of Telesciences at 2. Even if Motorola Microwave's arguments on foreign use of the 38 GHz band were considered, they still fail to take into account the fact that market requirements will vary from country to country and that, therefore, a 38 GHz radio used in one country will not necessarily be the same as a 38 GHz radio used in another country. Thus, even if PCS microcell interconnection in this country were limited to the 38 GHz band, the extent to which U.S. manufacturers could mass produce equipment for foreign consumption would still be limited. Further, while Harris does not deny that foreign customers can account for a significant portion of equipment sales, it disagrees with Motorola Microwave that foreign sales are necessary in order to produce low cost equipment for domestic use. Harris strongly believes that the size of the U.S. market alone will create sufficient economies of scale to produce low cost equipment.



be unwise to restrict future PCS operators to one band for the frequencies they may need to establish workable PCS interconnection facilities. Rather, the Commission should, consistent with its basic marketplace policies, allow the market and technical requirements to determine the extent to which these and other available microwave bands are used for PCS, or any other purpose for that matter.

Thus, the arguments concerning the relative merits of the 28 GHz, 38 GHz and 23 GHz bands for interconnecting future PCS microcells or cellular system cell sites are not relevant to Harris' proposal to channelize the 28 GHz band, and are otherwise without merit and should be rejected.

II. POSSIBLE FUTURE ALTERNATIVE USES OF THE  
28 GHz BAND DO NOT PROVIDE A BASIS FOR  
DENYING OR DEFERRING ACTION ON THE PETITION

Suite 12 Group opposes the Petition on the grounds that adoption of the proposed channelization plan would not permit the use of the 28 GHz band for point-to-multipoint operations, particularly the type of video distribution system licensed to Hye Crest Management, Inc. pursuant to a waiver granted earlier this year.<sup>5/</sup> It also argues that the propagation characteristics of the 28 GHz band are such that the band is

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<sup>5/</sup> Opposition of Suite 12 Group at 2-3. Interestingly, while Suite 12 Group opposes Harris' Petition with respect to possible use of the 28 GHz band for PCS microcell interconnection, it proposes to use the band for the very same purpose as an ancillary function of its proposed video distribution system. Id. at 6 n.17.

better suited for point-to-multipoint than point-to-point operations.<sup>6/</sup> Thus, Suite 12 Group urges the Commission to deny Harris' Petition or, at least, defer consideration of it until Suite 12 Group files its own petition to reallocate the band for point-to-multipoint operations.<sup>7/</sup> While not opposing point-to-point use of the band, Calling Communications Corporation ("Calling") suggests that the proposed channelization plan should not preclude use of the band for mobile communications or other "more spectrum efficient" technologies.<sup>8/</sup> For the following reasons, Harris submits that arguments concerning future potential alternative uses of the band, particularly for video distribution purposes, do not provide a basis for denying or deferring action on the Petition.

As an initial matter, Harris is not proposing to allocate additional spectrum for point-to-point operations, but simply to make an existing allocation useable. Suite 12 Group would have the Commission change the focus of the requested proceeding from one dealing with implementation of an existing allocation to one in which the focus would be on how spectrum should be allocated. The only issue before the Commission is the former.

Moreover, even if the Commission were to focus on how the 28 GHz band should be used, the types of alternative uses suggested by Suite 12 Group are not warranted because there is

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<sup>6/</sup> Id.

<sup>7/</sup> Id. at 8.

<sup>8/</sup> Comments of Calling at 4-5.

already a plethora of vehicles for the distribution of video programming. In addition to the vast amount of spectrum allocated for television broadcasting, there are the MDS and MMDS services, the OFS H channels (which the Commission has proposed to reallocate to MDS in Gen. Dkt. No. 90-54), the 21 GHz and 23 GHz OFS bands,<sup>9/</sup> excess capacity on ITFS systems, the 12.2-12.7 GHz band (which the Commission reallocated from OFS to DBS), and the 18 GHz OFS band (which the Commission recently opened up for video distribution in PR Docket No. 90-5 <sup>10/</sup>). This does not even include non-spectrum-based video programming sources such as cable and video cassettes as well as future fiber optic video distribution systems.

Further, the fact that the Commission granted a waiver to Hye Crest does not mean that the Commission has determined that there is a need for yet another video distribution spectrum allocation. The Commission granted that waiver largely because the 28 GHz band was not being used and the record did not show any immediate plans to use the band in New York City.<sup>11/</sup>

Suite 12 Group mistates the spectrum efficiency merits of point-to-multipoint versus point-to-point applications. Suite 12 Group states that the short path lengths of the 28 GHz band allow spectrum re-use at distances as close as 6 to 8 miles in the case of point-to-multipoint systems.<sup>12/</sup> It also claims that

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<sup>9/</sup> If, as Harris proposes, a Part 94 allocation is adopted for the 28 GHz band, frequencies in that band would be available for video distribution, but on a point-to-point basis only. See § 94.9(a)(1), (2), (b)(3).

<sup>10/</sup> Report and Order, 6 FCC Rcd 1270 (1991).

<sup>11/</sup> See Memorandum Opinion and Order, 6 FCC Rcd 332, 334 (1991).

<sup>12/</sup> Opposition of Suite 12 Group at 4.

the 28 GHz band does not appear to be suitable for interconnecting cellular system cell sites because such sites are typically spaced too far apart for the short distances achievable in the 28 GHz band.<sup>13/</sup>

First, Suite 12 Group is incorrect about the feasibility of using the 28 GHz band for interconnection of cellular system cell sites because in many urban areas, cell sites are, in fact, closely spaced. Secondly, there is no basis for the argument that 28 GHz band frequencies would be re-used more frequently in point-to-multipoint than in point-to-point operations. Re-use depends upon a number of technical factors, such as antenna directivity, height and power, rather than whether a point-to-point or point-to-multipoint configuration is being used. Indeed, under a given set of conditions, simple logic shows that frequencies used in highly directional point-to-point systems can be re-used more closely than frequencies used in not so narrowly directed point-to-multipoint systems.

In short, Harris has proposed, as it has done in the past, a sensible state-of-the art plan for channelizing a band of frequencies which have so far remained practically fallow. Technology now permits exploitation of the frequencies in that band. Suite 12's argument that the Commission should delay action until Suite 12 comes up with some undefined different proposal is, in Harris's view, without merit and should be rejected.

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<sup>13/</sup> Id. at n.9.

III. DEMAND FOR POINT-TO-POINT USE OF THE  
28 GHz BAND EXISTS BUT DEMONSTRATION OF SUCH  
DEMAND IS NOT NECESSARY TO SUSTAIN THE PETITION

Suite 12 Group contends there is no demand for point-to-point use of the 28 GHz band.<sup>14/</sup> Similarly, Motorola Microwave notes that it does not anticipate any requirement for additional spectrum in the 28 GHz band if PCS microwave is accommodated in the 38 GHz band.<sup>15/</sup>

As Harris noted in its Petition, the record in the Hye Crest proceeding reflected evidence of future demand for 28 GHz frequencies by the common carrier industry.<sup>16/</sup> Similarly, the need for point-to-point use of the 28 GHz band by private OFS users is evidenced by API's comments. Clearly there is increasing demand for point-to-point microwave facilities in the lower bands. <sup>17/</sup> Adoption of the channelization plan Harris has proposed will allow some of that demand to be absorbed in the 28 GHz band.

Finally, Harris submits that whether or not there is a demonstrated need for point-to-point frequencies in the 28 GHz band at this time misses the point. Again, the issue presented by the proposed channelization plan is not the purpose for which the 28 GHz band should be used. The band is already allocated

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<sup>14/</sup> Opposition of Suite 12 Group at 4-5.

<sup>15/</sup> Comments of Motorola Microwave at 8.

<sup>16/</sup> Petition at 5-6.

<sup>17/</sup> Petition at 6-7.

for point-to-point use under Part 21 and the objective of the Petition is simply to make this allocation useable.

#### IV. THE PROPOSED CHANNELIZATION PLAN OFFERS SUFFICIENT FLEXIBILITY

Peninsula Engineering Group, Inc. ("PEGI") opposes the proposed channelization plan because it believes such a plan would unnecessarily restrict overall product development. It argues, for example, that the larger bandwidth available for the 28 GHz band under the current rules (i.e., up to 220 MHz) makes it possible for manufacturers to develop products that would otherwise be technically impossible if the band were subdivided into smaller bands as proposed by Harris.<sup>18/</sup>

Harris's proposed channelization plan is designed to promote efficient utilization of the frequencies in the band. If, in fact, it is shown that there will be worthwhile uses for the 28 GHz band for which a bandwidth greater than 80 MHz may be required, then the Commission could permit the "stacking" of channels, as it presently does in the 952-960 MHz, 1850-1990 MHz, 6525-6875 MHz, 17.7-19.7 GHz and, most recently, in the 10.55-10.68 GHz band.<sup>19/</sup> API specifically endorses channel stacking as a means of providing sufficient bandwidth for data and/or voice delivery rates equivalent to fiber optic

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<sup>18/</sup> Opposition of PEGI at 3.

<sup>19/</sup> See Report and Order, Gen. Dkt. No. 90-216, 6 FCC Rcd 972 (1991).

service.<sup>20/</sup> Clearly, however, PEGI's arguments neither require nor justify denial of Harris's petition.

V. WHETHER OR NOT INDIVIDUAL LINK LICENSING IS  
DESIRABLE FOR THE 28 GHz BAND HAS NO BEARING ON  
WHETHER THE COMMISSION SHOULD GO FORWARD WITH A NPRM

Another reason asserted by Suite 12 Group for denying the Petition is that Harris has not proposed "blanket" licensing rules. Suite 12 Group maintains that individual link licensing will not be feasible for PCS microwave cell interconnection links.<sup>21/</sup>

Aside from the fact that the use of the 28 GHz band would not be limited to future PCS operators, the issue raised by Suite 12 Group is one which can be dealt with in the context of the proposed rule making proceeding. It is certainly not a reason for denying the Petition. In fact, Harris believes that Suite 12 Group raises a valid point with respect to simplifying licensing in the 28 GHz as well as other higher microwave bands and would suggest that the Commission consider this issue in the requested NPRM.

VI. HARRIS' PROPOSAL SHOULD NOT BE CONSIDERED  
IN THE CONTEXT OF THE PCS PROCEEDING

PEGI argues that the Petition is premature and that the Commission should consider a channelization plan for the 28 GHz

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<sup>20/</sup> Comments of API at 5-6.

<sup>21/</sup> Opposition of Suite 12 Group at 5-7.

band in the context of a Further Notice of Inquiry in the PCS proceeding.22/

Harris submits that the issue of how the 28 GHz band should be channelized is more appropriately considered in a separate rule making proceeding because the PCS proceeding is limited in scope. As Harris has stated repeatedly herein, use of the 28 GHz band should not be limited to that one type of service. Under the rules proposed in the Petition, the band would remain available for all point-to-point uses. Finally, because the PCS proceeding is likely to be a lengthy one, tying up the essentially technical proposal advanced by Harris with the broad PCS inquiry will only serve to delay the development of products for this band.

#### VII. A PART 94 ALLOCATION IS JUSTIFIED

Apart from those commenters who contend that the 28 GHz band should not be used for point-to-point uses at all, the only commenter who specifically objects to a Part 94 allocation is PEGI. PEGI states that the quotes contained in the Petition from common carriers expressing a need for the 28 GHz band undercuts Harris' contention that the band should also be made available under Part 94 because opening the band to Part 94 users would exacerbate the spectrum shortage facing common carrier users.23/

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22/ Opposition of PEGI at 5.

23/ Opposition of PEGI at 5.



Inasmuch as common carriers are not making any use of the 28 GHz band at the present time, Harris believes that the band can easily accommodate both Part 21 and Part 94 users. The time when spectrum congestion is a problem in the 28 GHz band and Part 94 use can be said to be exacerbating spectrum shortages facing common carriers is a long way off, if indeed it ever comes. Shared allocations have been successful in other bands and the comments offer no reason to expect that it would not be successful in the 28 GHz band.<sup>24/</sup> Thus, inasmuch as the band can be put to good use by private users, as API's comments point out,<sup>25/</sup> the Commission should make the band available for assignment under Part 94 as well in order to promote greater and more efficient use of a currently underutilized portion of the spectrum.

#### VIII. CONCLUSION

In sum, the arguments raised in opposition to Harris' Petition neither require nor justify not going forward with the requested rule making. Most of these arguments (i.e., that other bands should be used for PCS microcell or cell site

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<sup>24/</sup> Harris notes that Section 94.75 already sets forth technical standards for antennas operating in the 27.5-29.5 GHz band.

<sup>25/</sup> Comments of API at 4-6. API notes, for example, that the short-range propagation characteristics of the 28 GHz band would make the band "particularly useful in industrial settings such as oil refineries and other highly complex installations where the need for portability and flexibility in telecommunication equipment is paramount, and where, due to physical constraints, it is often not possible to install cables."

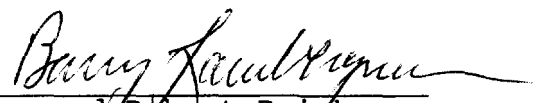
interconnection, that the band is better used for other purposes, that no need for point-to-point frequencies in the 28 GHz band has been demonstrated and that the Petition should be considered in the context of the PCS proceeding) are largely irrelevant because the purpose of the Petition is neither to "designate" the 28 GHz band for PCS microcell or other specific types of short haul microwave use nor to allocate additional spectrum for such uses. The purpose of the Petition is simply to give structure to an existing allocation so that the band can finally be put to use for the purposes for which it has long been allocated.

In addition, making the 28 GHz band available for assignment under Part 94 is justified because common carriers are not making any use of the 28 GHz band at the present time and because the success of shared allocations in other bands suggests that Part 21 and Part 94 users can both be accommodated in the 28 GHz band.

Accordingly, Harris urges the Commission to reject the arguments of those parties who have opposed the Petition and to adopt a notice of proposed rule making as proposed in the Petition.

Respectfully submitted,

HARRIS CORPORATION --  
FARINON DIVISION

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July 2, 1991

CERTIFICATE OF SERVICE

I, Elizabeth Gillies, a secretary in the law firm of Fletcher, Heald & Hildreth, do hereby certify that true copies of the foregoing "Reply Comments" were mailed this 2nd day of July, 1991, by first class mail, postage prepaid, to the following:

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